

invention to produce acceptable duplex welds when orbitally welding tubes made from duplex stainless steels, especially those having wall thicknesses of more than 2 mm. Specification, page 3, first full paragraph.

Against this background, applicant discovered that excellent welds preserving the duplex structure of the steel and further exhibiting desirable qualities of density and uniformity could be reliably and consistently achieved with standard orbital welding equipment by using high refractory fluxes such as those shown in the Paskell patent and further by using a non-pulsed electric arc as the heat source for welding. Specification, page 4, first paragraph.

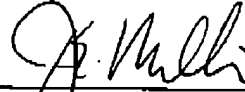
Most orbital welders use pulsed electrode currents, since it is easier to regulate and control the heat at the weld zone. Specification, page 7, last paragraph. In accordance with the present invention, however, applicant found that pulsed electrode currents lead to unacceptably porous and non-uniform welds if high refractory fluxes are used. Specification, page 7, last paragraph. Therefore, the present invention adopts non-pulsed electrode currents, as well as high refractory fluxes, for orbital welding. The result is that welds having both a duplex structure as well as desired qualities of uniformity and density can be produced reliably and consistently with conventional orbital welding equipment.

The Paskell, Barefoot and Hummel patents fail to disclose the very existence of **duplex** stainless steels. Nor do they disclose carrying out orbital welding using **non-pulsed** or **continuous** electrode currents. Accordingly, even considered in combination, they fail to suggest material features of the present invention as expressly claimed. And, they clearly fail to suggest that these features would allow desirable duplex welds to be reliably and consistently achieved with conventional orbital welding equipment, as applicant found.

To further demonstrate the present invention, the Examiner is directed to the attached paper that was presented at the Duplex 2000 conference in October of 2000. From this paper it can be seen that the use of a high refractory flux during welding of a duplex stainless steel tube in accordance with the present invention maintains the duplex structure of the stainless steel tubing and preserves the overall integrity of the weld. Nothing in the cited references suggests this unusual and surprising result.

Accordingly, these references fail to suggest the present invention, as claimed, therefore Applicants respectfully request reconsideration.

Respectfully submitted,



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